



## Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact [support@jstor.org](mailto:support@jstor.org).

# SCIENCE

A WEEKLY JOURNAL DEVOTED TO THE ADVANCEMENT OF SCIENCE, PUBLISHING THE  
OFFICIAL NOTICES AND PROCEEDINGS OF THE AMERICAN ASSOCIATION  
FOR THE ADVANCEMENT OF SCIENCE.

EDITORIAL COMMITTEE: S. NEWCOMB, Mathematics; R. S. WOODWARD, Mechanics; E. C. PICKERING, Astronomy; T. C. MENDENHALL, Physics; R. H. THURSTON, Engineering; IRA REMSEN, Chemistry; CHARLES D. WALCOTT, Geology; W. M. DAVIS, Physiography; HENRY F. OSBORN, Paleontology; W. K. BROOKS, C. HART MERRIAM, Zoology; S. H. SCUDDER, Entomology; C. E. BESSEY, N. L. BRITTON, Botany; C. S. MINOT, Embryology, Histology; H. P. BOWDITCH, Physiology; J. S. BILLINGS, Hygiene; WILLIAM H. WELCH, Pathology; J. McKEEN CATTELL, Psychology; J. W. POWELL, Anthropology.

FRIDAY, JUNE 20, 1902.

## CONTENTS:

<i>Measurement and Calculation:</i> PROFESSOR R. S. WOODWARD.....	961
'Natural History,' 'Ecology' or 'Ethology': PROFESSOR WILLIAM MORTON WHEELER....	971
<i>The Law of von Baer:</i> OTTO C. GLASER.....	976
<i>Membership of the American Association</i> ....	982
<i>Scientific Books:—</i>	
Barbarin's <i>La géométrie non-Euclidienne:</i> DR. GEORGE BRUCE HALSTED. <i>Packard's Life of Lamarck:</i> PROFESSOR WILLIAM A. LOCY .....	984
<i>Societies and Academies:—</i>	
<i>The Botanical Society of Washington:</i> DR. HERBERT J. WEBBER.....	989
<i>Discussion and Correspondence:—</i>	
<i>What is Nature Study?</i> PROFESSOR W. J. BEAL. <i>Ecology:</i> DR. F. A. BATHER. <i>Mass and Weight:</i> CARL HERING.....	991
<i>Shorter Articles:—</i>	
<i>Divergence of Long Plumb-lines at the Tamarack Mine:</i> PROFESSOR F. W. MCNAIR. <i>Seed in Seed Plants:</i> PROFESSOR FRANCIS RAMALEY.....	994
<i>Harvard College Observatory Astronomical Bulletin:</i> PROFESSOR EDWARD C. PICKERING .....	996
<i>A Graduate School of Agriculture</i> .....	997
<i>Scientific Appointments under the Government</i> .....	997
<i>The Pittsburgh Meeting of the American Association:</i> GEORGE A. WARDLAW.....	998
<i>Scientific Notes and News</i> .....	998
<i>University and Educational News</i> .....	999

MSS. intended for publication and books, etc., intended for review should be sent to the responsible editor, Professor J. McKeen Cattell, Garrison-on-Hudson, N. Y.

## MEASUREMENT AND CALCULATION.\*

IN my address of a year ago I sought, in a summary way, and by concrete illustration, to indicate how science originates in and advances with observation and experiment. I would now invite your attention to a similar consideration of the rôle which measurement and calculation play in the higher developments of science.

All sciences are at first qualitative. They pass in their growth from the fact-gathering stage of unrelated qualities to the orderly stage of related qualities and thence upward to the stage of quantitative correlation under theory. Such, at any rate, has been the course of all sciences hitherto developed, and it seems safe to predict that such will be the course of those which may arise in the future. The recognition of this fact is of prime importance. It helps us to understand the great relative diversity in perfection among the sciences; it affords a basis for rational optimism with respect to the continued progress of science; and it ought to make the specialists of the older sciences less contemptuous than they sometimes are in their attitude toward the newer ones which have not yet passed the 'rock-naming and bug-hunting stage.'

Whenever a quantitative relation be-

\* Address of the retiring President of the New York Academy of Sciences, read February 24, 1902.